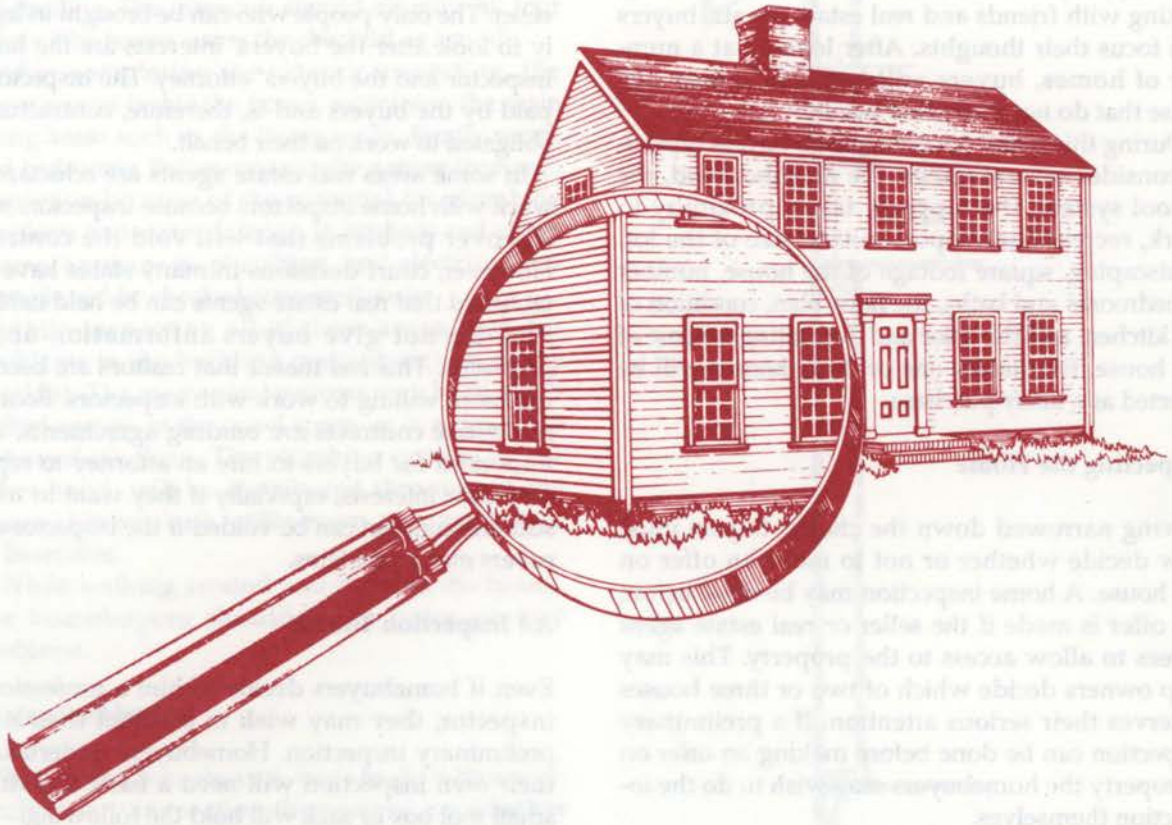
INSPECTING THE HOME



Small Homes Council-Building Research Council
University of Illinois at Urbana-Champaign

Buying a home is the biggest single investment most consumers make in a lifetime. Knowing how to shop wisely and avoid unexpected expenses is just as important when purchasing a new home as it is when purchasing a new car. Homebuyers who know how to inspect a home before signing a contract protect themselves from future problems. This circular describes major problem areas in homes and describes major and minor repairs. The inspection checklist will help buyers remember what to look for while making their inspection.

Shopping for a Home

Buyers may already have a good idea of their ideal home. But if they do not, an initial screening process is a good idea. By visiting several homes, by shopping in different neighborhoods, and by talking with friends and real estate agents, buyers can focus their thoughts. After looking at a number of homes, buyers will begin to screen out those that do not meet their needs.

During this initial screening stage buyers typically consider several things: the neighborhood, the school system, the property taxes, proximity to work, recreational opportunities, size of the lot, landscaping, square footage of the house, number of bedrooms and baths, the floor plan, condition of the kitchen, and the color and decorating scheme of the house. Eventually one or more houses will be selected as a likely purchase.

Inspecting the Home

Having narrowed down the choice, buyers must now decide whether or not to make an offer on the house. A home inspection may be done before the offer is made if the seller or real estate agent agrees to allow access to the property. This may help owners decide which of two or three houses deserves their serious attention. If a preliminary inspection can be done before making an offer on a property the homebuyers may wish to do the inspection themselves.

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A home inspection can also be placed as a "contingency" on the contract. This means that the buyer has the right to hire the services of a professional home inspector paid by the buyer to try to discover structural or mechanical problems in the home. Contract language such as "Approval subject to a favorable inspection by the firm xxx, Home Inspectors" can be included by the buyers' real estate agent if the buyer asks. If the inspector does discover problems, the contract can be renegotiated, or the buyer may withdraw the offer to purchase.

It is important to note that real estate law establishes that both real estate agents–the agent for the buyer and the agent for the seller–are working for the seller. Both agents are paid a commission by the seller. So even if the real estate agent seems to be working for the best interests of the buyers, agents are required by law to look after the interests of the seller. The only people who can be brought in legally to look after the buyers' interests are the home inspector and the buyers' attorney. The inspector is paid by the buyers and is, therefore, contractually obligated to work on their behalf.

In some areas real estate agents are reluctant to work with home inspectors because inspectors may discover problems that will void the contract. However, court decisions in many states have established that real estate agents can be held liable if they do not give buyers information about problems. This has meant that realtors are becoming more willing to work with inspectors. Because real estate contracts are binding agreements, it is important for buyers to hire an attorney to represent their interests, especially if they want to make sure the contract can be voided if the inspector discovers major problems.

An Inspection Toolkit

Even if homebuyers decide to hire a professional inspector, they may wish to conduct their own preliminary inspection. Homebuyers undertaking their own inspection will need a basic toolkit. A small tool box or sack will hold the following:

- a flashlight
- a Phillips-head screwdriver and flat-head screwdriver
- a circuit tester
- (optional) a scratch awl
- (optional) binoculars

Buyers may also wish to obtain the owners' permission to inspect the roof. If the owner grants permission, an extension ladder will also be needed. The buyer should also find out whether a step lad-

der will be needed to get to the attic. Sometimes the only access to the attic is through a hatch in the closet ceiling.

If an owner is not comfortable with a buyer climbing on the roof, or if the roof is too steep, the buyer may be able to lean a ladder against the edge of the roof and inspect the roof condition from the eaves. Or, binoculars can be used if none of the above is an option.

Inspection Checklist

The inspector must make sure that no part of the building is overlooked. The inspection checklist has been designed to help homebuyers make a preliminary evaluation. It is not as comprehensive as a professional inspector's checklist, but it can help buyers identify major problems.

The checklist starts on the outside of the house at the roofline. The inspector should examine all four sides of the house, using the checklist as a guide.

After completing the exterior inspection, the buyer moves inside the house, examining the main living areas such as the living room, family room, and bedrooms. Bathrooms require a more thorough inspection because of the potential for plumbing problems and water damage. In kitchens and utility rooms, appliances, plumbing, and electrical systems should be checked conscientiously.

While inspecting all of these areas, look for problems in the building systems section of the checklist. The mechanical systems may be in an attached garage, in the crawl space, or in a closet. Do not overlook them. The plumbing system, on the other hand, will be distributed throughout the house – kitchen, bath, utility room, and crawl space or basement.

While walking around and through the house, the homebuyers should make notes on any problems.

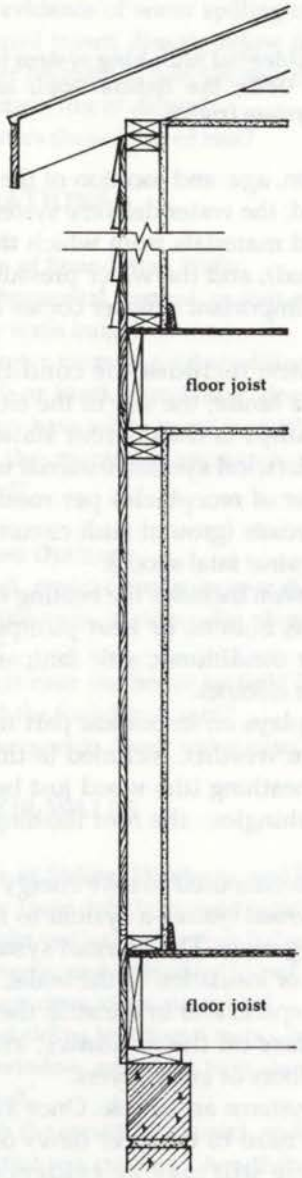
Major Problems

Whether the homebuyers wish to do a thorough preliminary inspection themselves, or whether they wish to hire a professional, the inspection itself must be extremely thorough. Many problems in homes are hidden. Inspectors will not discover these problems unless they *systematically* inspect the entire house–from roof to foundation. The inspection must include a check of all the building "systems".

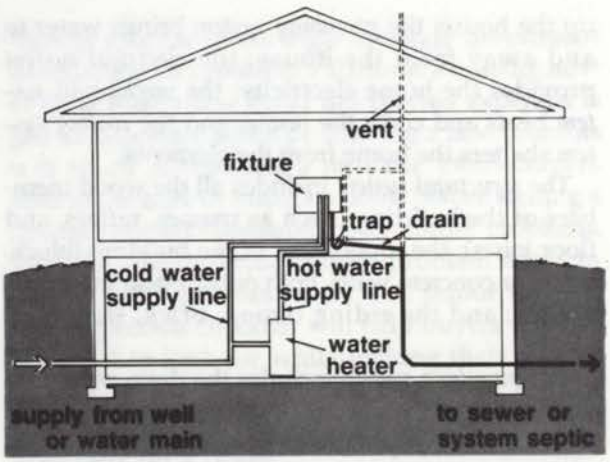
Problems With Building Systems. A system is several parts that work together toward a common goal. For example, the *structural system* holds up the house; the *plumbing system* brings water to and away from the house; the *electrical system* provides the home electricity; the *mechanical system* heats and cools the home; and the *roofing system* shelters the home from the elements.

The *structural system* includes all the wood members of the building (such as trusses, rafters, and floor joists); the foundation of the building (block, brick, or concrete walls, both outside and inside the house); and the siding (wood, brick, stucco, or block).

The *plumbing system* includes the drain pipes and vent stacks (this carries waste to the sewer and maintains atmospheric [air] pressure in the waste



An exterior inspection includes an evaluation of the roof system, a look at the condition of walls , windows and doors, and an investigation of the foundation system and foundation drainage.



Components of a residential plumbing system include the supply system (left); the fixture (top); and the drainage and vent system (right).

pipes); the condition, age, and location of the septic tank and drain field; the water delivery system (the age, condition, and materials from which the system was constructed); and the water pressure and quality (especially important if water comes from a well).

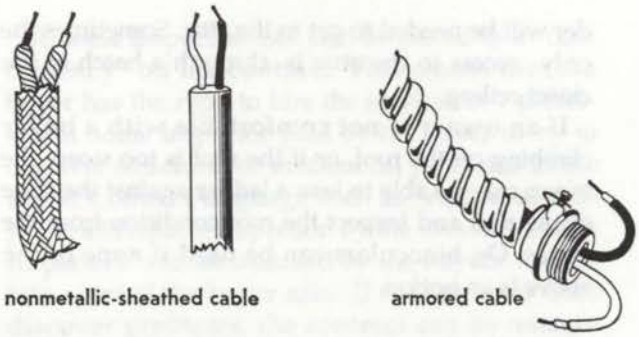
The *electrical system* includes the condition of wires leading to the house; the size of the electrical service (150-200 amps is the current standard); grounding of the electrical system; material used in the wiring; number of receptacles per room; and the use of GFCI circuits (ground fault circuit interrupter to protect against fatal shock).

The *mechanical system* includes the heating system (forced air furnace, boilers, or heat pumps); the cooling system (air conditioner, attic fan); and the water heater (gas or electric).

The *roof system* plays an important part in sheltering a house from weather. Included in this system are the roof sheathing (the wood just beneath the shingles); the shingles; the roof flashing; and the gutters.

Similarly, the materials used to save energy could be considered a *thermal system*–a system to reduce heating and cooling costs. The thermal system includes the amount of insulation in the walls, in the basement or crawl space, and in the attic; the number of panes of glass on the windows; and the presence of storm doors or entry foyers.

Not all of these systems are visible. Once a house is built, it is often hard to uncover flaws of construction. But there still may be evidence of a problem, and if homebuyers or professional inspectors are alert, they note the problem so the buyer can try to discover its cause.

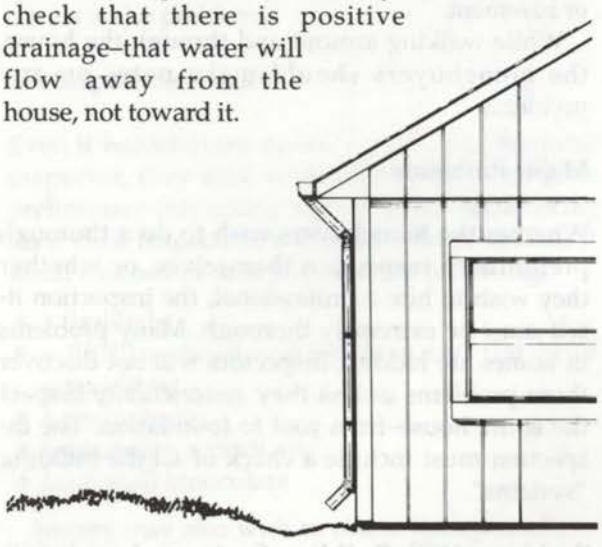


The electrical system should use wiring approved by the National Electrical code.

Problems Caused by Water. Besides checking that the building systems function as they were intended, inspectors should look for problems caused by water. Water will cause almost all building materials to deteriorate. Wood and brick, two of the major building materials in home construction, are especially vulnerable.

Water must be captured and directed away from the house. The first line of defense is the gutter. If gutters are clogged with leaves, water will overflow onto the ground near the house. Gutters that are too long may overflow during heavy rain. An inspector should always look at gutters carefully to make sure they function as intended.

Even when gutters work effectively, water can still pond near the house if the soil nearest the house has settled. When houses are first constructed, the soil from basement or crawl-space excavation is backfilled against the foundation walls. Over time, this backfill settles. Settlement can create a moat around the house. Filling in this moat with gravel will not help move the water away from the house. An inspector should always check that there is positive drainage–that water will flow away from the house, not toward it.



A moat can be created when backfill settles or downspouts deposit water near the foundation.

THE HOME-INSPECTION CHECKLIST: EXTERIOR INSPECTION

THE ROOF

Pitched Roofs

Identify roofing material.

- asphalt shingles
- wood shingles
- slate, clay tile, or other

Determine the condition of shingles and roof sheathing.

- Are repairs visible?
- Have shingles blown off?
- Are surface granules missing?
- Are shingles cracked?
- How old are shingles?
- How many layers of shingles are there?
- Are there sagging, uneven, or soft places?

Determine the condition of valleys, ridges, and flashings.

- Is the chimney flashed with metal?
- Are plumbing and heating vents flashed?
- Is flashing in good condition or rusted?
- Are valleys torn?
- Does roofing material in valleys look worn?

Look for ventilation.

- Are there vents high on the roof?
- Are there soffit vents?

Flat Roofs

Look for problems that may cause leaks.

- Are there cracked, blistered or torn spots?
- Does water accumulate in low spots?
- Does the roof drain toward downspouts?
- Are there any open seams?

Chimneys

Inspect for cracked or loose sections of masonry.

- Is there a chimney cap?
- Is mortar in good condition?
- Are there any cracks in the chimney?

Inspect flues to make sure they are free of debris and have a flue liner.

- Are flues blocked by debris?
- Are chimneys lined with clay tile?

Make sure chimneys meet code requirements.

- Are metal chimneys or flues securely anchored to the roof?
- On pitched roofs, do chimneys extend 2 feet above the ridge?
- On flat roofs, do chimneys extend 3 feet above the roof line?
- Have wood-burning stoves or flues been installed according to local building codes?

Gutters and Downspouts

Identify gutter material.

- Aluminum
- Copper
- Galvanized steel

Inspect gutter drainage.

- Are gutters pitched toward the downspout?
- Are downspouts spaced too far apart?
- Are hangers no more than 30" apart?
- Is the evidence of water spilling over gutters, such as a small trench directly below them, or evidence of water backsplash onto the side of the house?
- Are gutters free of debris?
- Do gutters show signs of rust?

FOUNDATIONS

Condition of Foundation Walls

Look for horizontal, vertical, or stair-step cracks.

- Do the walls bulge?
- Are mortar joints in good condition?
- If brick or block foundation, does the foundation masonry have white powder on it?
- Does the masonry appear to crumble when touched?

Foundation Drainage

Inspect soil, gravel or concrete near the foundation.

- Do driveways or sidewalks slope away from the house?
- Has soil near the house settled? Does water pond around the foundation wall?
- Do downspouts divert water away from the house?

EXTERIOR WALLS

Condition of Siding, Windows, and Doors

Inspect for these defects in construction.

- Are walls vertical, or do they bulge?
- Is siding cupped or buckled? Knot holes loose?
- Are there open joints at corners?
- Is wood siding less than 6 inches from the ground?
- Does window and door trim show signs of water damage?
- What is the condition of paint, stain, or finish?
- Are windows cracked? Are there screens? Storm windows? More than one pane of glass?

Location of Utilities

Determine the location of utilities.

- Where do electricity, water, and gas enter the house?

THE HOME-INSPECTION CHECKLIST: INTERIOR INSPECTION

ALL ROOMS

Windows and Doors

Determine whether windows and doors protect the house from weather.

- Are doors and windows weatherstripped?
- Do they open easily? Have working locks?
- Is there evidence of water damage on the insides of windows? Could this be caused by condensation in cold weather?

Walls and Ceilings

Look for stains on ceilings and at tops of walls.

- Are there brown spots on ceilings or walls?
- Do walls bulge? Are ceilings sagging? Are walls or ceilings cracked?
- Is the condition of the paint good?

Floors

Make sure floors are reasonably level.

- Are any areas sagging badly?
- Are there soft spots near doors, around sinks, or near showers and toilets?

Fireplaces and Freestanding Heating Stoves

Make sure these are installed according to code.

- Does the fireplace damper close tightly?
- Is the chimney flue clean? Is there a flue liner? Are mortar joints in good condition?
- Are the wall and ceiling surfaces next to a wood stove adequately protected?

BATHROOM

Check bath carefully for electrical, plumbing, ventilation, and water-damage problems.

- Are bath receptacles protected with ground fault circuit interrupters?
- Is there a vent fan? Where does it discharge?
- Do all fixtures have shut-off valves?
- Is water pressure adequate?
- Are any pipes leaking?
- Are there loose tile around the shower or spongy areas on the floor around the toilet?

KITCHEN AND UTILITY ROOM

Major appliances in the kitchen must be inspected individually. Frequently, the electrical service, the water heater, and the furnace and air conditioner will also be located in the kitchen or utility room.

- Does the water heater have shut-off valves? A pressure-relief valve?
- Do all appliances work? Test each range element.
- Is there a vent over the kitchen stove? Does it discharge to the out-of-doors?
- Is all plumbing free of leaks?
- Is water pressure adequate?
- Are electrical outlets grounded? Are there enough outlets around the counter?

ATTIC

Look for attic insulation and ventilation.

- Is the attic insulated?
- What is the material? How many inches?
- Is the attic well ventilated?
- Is the roof sheathing (the wood to which the shingles are nailed) in good condition? Are there signs of water damage? Check chimney area carefully.
- Is there rust on the nails or stains of the sheathing?
- Do any exhaust fans vent into the attic?
- Have any structural members (such as rafters or trusses) been cut to allow ductwork placement?

BASEMENT/CRAWL SPACE

Inspect for water and insect damage.

- Are there cottony white growths or black mildew stains on any wood members? Does a screwdriver or scratch awl penetrate the wood?
- Are there mud tubes on wood members or foundation walls? Are there piles of sawdust beneath wood? Small holes or channels where insects might have entered?
- Is exposed earth or gravel covered with plastic?
- Are the crawl space or basement walls insulated?
- Are there crawl space vents?

MECHANICAL AND ELECTRICAL SYSTEMS

Electrical System

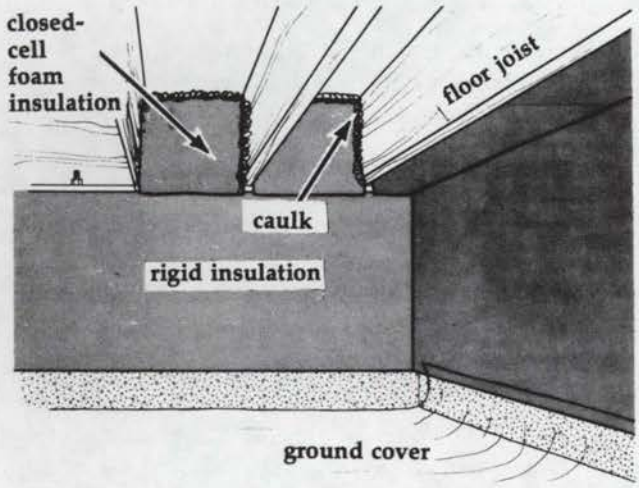
Look for an electrical system to meet the buyers' needs.

- How many amps does the system have?
- Are there circuit breakers or fuses?
- Is there knob-and-tube wiring?

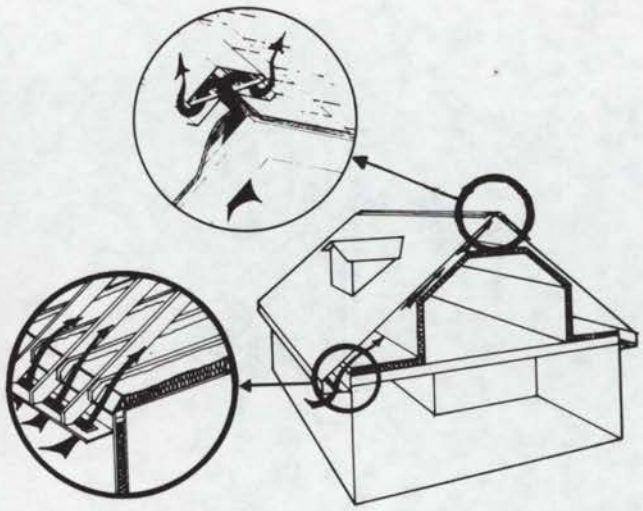
Heating and Cooling System

Check the age of the heating and cooling equipment.

- Is there rust visible inside (near the burner) of the forced-air furnace? Inside the water heater?
- Are there cracks in the furnace heat exchanger?
- Do the furnace and air conditioner heat/cool the house? Turn them on to check.
- Is the boiler leaking or corroded?



Water problems are often seen in crawl spaces. The inspector looks for evidence of water damage and makes sure there is a ground cover on any exposed earth.



The circled drawings show how air is drawn in through soffit vents and how it exits through a ridge vent.

Why is this so important? Water that ponds around the outside of the house or spills over clogged gutters will soon find its way into the basement or crawl space. In a finished basement water seeping through the walls will damage the wood framing and the wall finish materials, or it will cause mildew problems. In a crawl space, water will evaporate and migrate through the house to the attic. Cold weather will cause this moisture-laden air to cool down. The water vapor will change to water. If the weather is cold enough, frost may form on the underside of the roof sheathing and the sheathing will rot. Metal truss-plates and nails will rust. Or water will condense on uninsulated metal ductwork and run down onto the ceiling below. Thus, even if the roof is not leaking, water can still cause problems in the attic. Water causing problems in the attic often comes from a wet basement or crawl space.

Problems Caused by Poor Ventilation. Water-related problems that occur in an attic may be made worse by poor ventilation. An inspector should always check to see whether there is adequate attic ventilation (and whether there are foundation vents so that a damp crawl space can dry out after a rain). In the attic, the inspector would suspect inadequate ventilation if any of the following were found:

- brown or mildewed areas on the plywood sheathing or wood framing
- evidence of rust on the nails
- corrosion on truss plates
- fungal growths on wood members

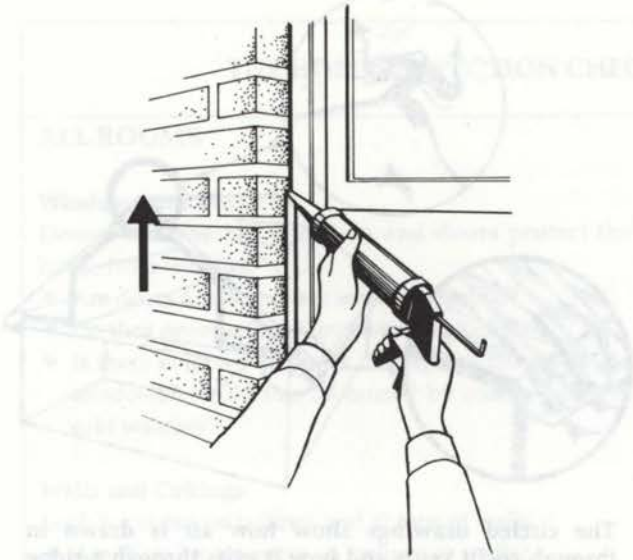
Vents should be located both high and low on a roof. For example, vents in the soffit (or overhang of the roof) and a continuous vent along the ridge provide a "chimney effect". Air is pulled in low through the soffit vents and rises to the middle of the roof at the ridge. This helps move the air through the attic. Gable vents are less effective because they depend on wind direction to pull air through the attic, and they are more likely to take in blowing snow.

Because moisture can be such a problem in attics, it is extremely important that builders and owners avoid dumping additional moisture into the attic or crawl space. Inspectors should look for bathroom vent fans, kitchen range hoods, and plumbing vent stacks that stop at the attic level. After identifying problems, the homebuyers can begin to estimate the time and money needed to correct them.

Evaluating the Results

When an inspection is complete, the homebuyers look through their notes or through the inspector's report and make up a summary sheet. Problems can be divided into major problems and minor problems.

For people with good hands-on skills who are comfortable with weekend projects, a long list of minor repairs may not be serious. But for those who have never touched a tool, such a list could be intimidating. Generally, minor repairs are those that cost less than $1,000 total, or those that the potential owners could do themselves. Minor repairs could include the following:



Caulking windows to improve energy efficiency is an example of a low-cost maintenance procedure.

- caulking windows and doors
- adding attic insulation
- painting
- fixing a kitchen faucet
- cleaning out gutters
- installing storm windows

These repairs become part of the yearly maintenance routine for many homeowners. When regular maintenance is deferred year after year, however, the list of chores grows longer and longer. Homebuyers may want to balance the number of repair items caused by deferred maintenance with their time, talent, and motivation.

More serious is the number of major repairs. These can cause a financial crisis for new homebuyers, especially those who have stretched their financial resources to accumulate a down payment to purchase the home. Major repair items include the following:

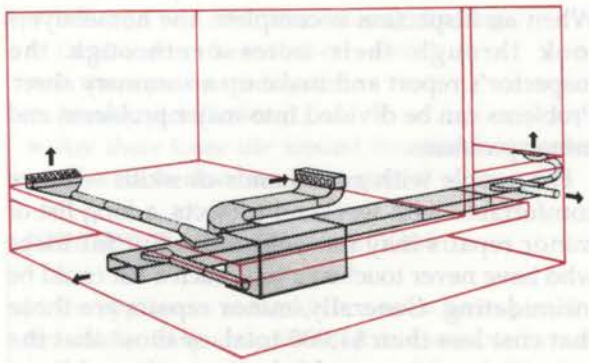
- replacement windows
- need for a new roof
- a new furnace or air conditioner
- a new electrical service
- a very leaky basement
- any major structural problem

Having to make any of these repairs soon after purchasing a home might entail an expense of $1,000 to $5,000 or more. The safest approach is for the homeowner to list the major and minor repair items separately and then talk with friends who are familiar with construction prices in the area.

Conclusion

Discovery of major problems may mean that the homebuyers offer less to the seller–if the problems are discovered before the offer is made. If a professional home inspector discovers these problems, it may be possible to void the contract or renegotiate the price offered. The American Society of Home Inspectors (ASHI) can provide a list of professionals who belong to their organization. Their address is 3299 K St. NW, Seventh Floor, Washington D.C., 20007.

Homebuyers must carefully evaluate the asking price, the price of comparable homes (especially those with fewer problems), and their own financial resources. For many, the opportunity to buy a "fixer-upper" in a good neighborhood may warrant the expense of the anticipated repairs. A good decision is based on knowing all the facts about the home's condition.



Replacing a crawl-space warm-air furnace is an example of an expensive repair that should be considered when evaluating the potential maintenance costs of a new home.